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| EXAMINER | |
|---|---|
| HO, CHUONG T | |

| ART UNIT | PAPER NUMBER |
|---|---|
| 2664 | |

DATE MAILED: 02/06/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 09/704,898 | ABI-NASSIF ET AL. | |
| | Examiner | Art Unit | |
| | CHUONG T. HO | 2664 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *17 January 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-33* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-33* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

1. The amendment filed 01/17/06 have been entered and made of record.

2. Claims 1-33 are pending.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1, 2-4, 5, 6-8, 9-12, 26, 28-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Patel et al. (U.S.Patent No. 6,865,185 B1) in view of Tiedemann et al. (U.S.Patent No. 6,567,420 B1).

In the claims 1, 26, Patel et al. discloses inserting labels or tags in fron of each data packet indicating the FEC which is based on the commonability of flow characteristics. Such lablels or tags enable the enforcement of QoS treatments (see col. 3, lines 62-65); The system for queing traffic in a wireless network includes receiving a stream of packets for transmission in the wireless network..... Each packet is queued in an assigned vrtual group for transmission in the wireless network (see abstract); comprising:

- Receiving data packets at a communication node; associating each of the received data packets with one of a set of different service classes; transmitting packets corresponding to the received packets to recipients based on the service

class associated with each of the received data packets corresponding to the outbound packets (see col. 3, lines 62-65, abstract).

- Controlling the order in which packets are transmitted based on the transmission rate (Guaranteed Rate) and the service class (QoS Class) of the packets (see col. 1, lines 42-43).

However, Patel et al. is silent disclosing controlling an order in which the outbound packets are transmitted to the recipients based on rates of transmission of the outbound packets.

Tiedemann, Jr. et al. discloses controlling an order in which the outbound packets are transmitted to the recipients based on rates of transmission of the outbound packets (see col. 4, lines 61-63, the remote unit retrieves the set point information from the overhead channel and uses it to determine the rate at which it transmits).

Both Patel, and Tiedemann disclose the different service class of the packets. Tiedemann recognizes controlling an order in which the outbound packets are transmitted to the recipients based on rates of transmission of the outbound packets. Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the system of Patel with the teaching of Tiedemann to associate each of the received data packets with one of a set of different service classes in order to control transmitting packet to the recipient based on QoS, transmission rate. Therefore, the combined system would have been reduced the delay time in the processing packets.

4. In the claim 2, Patel et al. discloses the transmitted packets comprise physical layer packets (see col. 2, lines 5-45).

5. In the claim 3, Patel discloses the rates of transmission are controlled based on a time-division multiplexing algorithm (see col. 10, lines 11-18).

6. In the claim 4, Patel discloses the node comprises a radio node of communication protocol (see figure 1, col. 10, lines 10-45).

7. In the claim 6, Patel et al. discloses the different classes of service conform to a differentiated services architecture (see col. 3, lines 62-65, abstract).

8. In the claim 7, Patel et al. discloses the differentiated service architecture comprises DiffServ (see col. 3, lines 62-65, abstract).

9. In the claim 8, Patel et al. discloses the service classes comprises at least one expedited forwarding class and at least one assured forward class (see col. 10, lines 12-18).

10. In the claim 5, Tiedemann, Jr. et al. discloses high data rate (see col. 4, lines 65-67, col. 7, lines 1-5)

11. In the claim 9, Tiedemann, Jr. et al. discloses receiving a user-defined minimum average forwarding percentage rate for at least one of the different service classes (see col. 7, lines 1-5).

12. In the claim 10, Tiedemann, Jr. et al. discloses the percentage comprises a percentage of the total bandwidth of a link on which the packets are transmitted (see col. 2, lines 57-67).

13. In the claim 11, Tiedemann, Jr. et al. discloses the transmission rates are sent by the recipients (see col. 7, lines 1-5)

14. In the claim 12, Tiedemann, Jr. et al. discloses the transmission rates are sent by the recipients using a feedback channel to the node (see col. 8, lines 1-8).

15. In the claim 28, Tiedemann, Jr. et al. discloses the rate of transmission of each of the outbound packets varies based on a quality of a channel that serves the recipient of the outbound packet (see col. 8, lines 1-8).

16. In the claim 29, Tiedemann, Jr. et al. discloses the rate of transmission of each of the outbound packets varies based on a quality of a channel that serves the recipient of the outbound packet (see col. 8, lines 1-8).

17. Claims 13, 14-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combined system (Patel - Tiedmann) in view of Jalali. et al. (Data throughput of CDMA-HDR).

In the claim 13, the combined system (Patel - Tiedemann) discloses the limitations of claim 1 above.

However, the combined system (Patel - Tiedmann) is silent to disclosing an order of transmission of the packets is controlled by two-level scheduling including a class level in which ordering is determined among the classes of service and a recipient level in which ordering is determined among the recipients associated with each class

Jalali et al. discloses an order of transmission of the packets is controlled by two-level scheduling including a class level in which ordering is determined among the

classes of service and a recipient level in which ordering is determined among the recipients associated with each class (see page. 1856, col. 1, lines 34-50).

Both, Patel, Tiedmann and Jalali et al. disclose the class of service of packets. Jalali recognizes an order of transmission of the packets is controlled by two-level scheduling including a class level in which ordering is determined among the classes of service and a recipient level in which ordering is determined among the recipients associated with each class (see page. 1856, col. 1, lines 34-50). Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the combined system (Patel - Tiedmann) with the teaching of Jalali to provide two-level scheduling including a class level in which ordering is determined among the classes of service and a recipient level in which ordering is determined among the recipients associated with each class in order to been enable the scheduler to determine the order to transmit data packets to recipient based on transmission rate and class of service of data packet.

18. In the claim 14, Jalali et al. discloses the recipient level uses the Qualcomm algorithm (see page 1856, col. 1, lines 34-50).

19. In the claim 15, Jalali et al. discloses the class level scheduling is based on at least one of the following for each of the classes: a configured minimum average forwarding rate percentage for the class, an actual forwarding rate percentage recently received by the class, and a channel quality of the recipients that belong to the class and are selected to receive service by the recipient level scheduling (see page 1856, col. 2, lines 34-50).

20. In the claim 16, Jalali et al. discloses the class level scheduling is done over a predetermined length window of time slots (see page 1856, col. 1, lines 34-50).

21. In the claim 17, Jalali et al. discloses the class level scheduling includes a weighted round robin scheduling algorithm in which the weights corresponds to channel quality of the recipient belonging to the respective classes (see page 1856, col. 2, lines 34-50).

22. In the claim 18, Jalali et al. discloses the class level scheduling is based at least in part on a planned selection at the recipient level within each class (see page 1856, col. 1, lines 34-50).

23. In the claim 19, Jalali et al. discloses the class level scheduling is based on a metric scaled by different scaling factors for different service classes (see page 1856, col. 2, lines 34-50).

24. In the claim 20, Jalali et al. discloses the scaling factor for all service classes are adaptively adjust to meet the MAFRP for the service classes (see page 1856, col. 2, lines 34-50).

25. In the claim 21, Jalali et al. discloses the class level scheduling is based on a metric which is adaptively adjusted to meet the MAFRP for the service classes (see page 1856, col. 2, lines 34-50.

26. In the claim 22, Jalali et al. discloses the class level scheduling selects a class from among a subset of the classes (see page 1856, col. 1, lines 34-50).

27. In the claims 23, 25, Jalali et al. discloses the member of the subset of classes are determined by pre-assigned schedule times (see page 1856, col. 1, lines 34-50).

In the claim 24, Jalali et al. discloses the recipient level scheduling selects a recipient from among a subset of the recipients (see page 1856, col. 1, lines 34-50).

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

28. Claims 27, 30-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Patel et al. (U.S.Patent No. 6,865,185 B1) in view of Bonomi et al. (U.S.Patent No. 6,069,872).

In the claim 27, Patel et al. discloses inserting labels or tags in fron of each data packet indicating the FEC which is based on the commonability of flow characteristics. Such lablels or tags enable the enforcement of QoS treatments (see col. 3, lines 62-65); The system for queing traffic in a wireless network includes receiving a stream of packets for transmission in the wireless network..... Each packet is queued in an assigned vrtual group for transmission in the wireless network (see abstract); comprising:

- Receiving data packets at a communication node; associating each of the received data packets with one of a set of different service classes; transmitting packets corresponding to the received packets to recipients based on the service class associated with each of the received data packets corresponding to the outbound packets (see col. 3, lines 62-65, abstract).

- Controlling the order in which packets are transmitted based on the transmission rate (Guaranteed Rate) and the service class (QoS Class) of the packets (see col. 1, lines 42-43);
- Scheduling packet for transmission among distinct classes based on the receiving values (rates or bandwidths).

However, Patel et al. is silent to disclosing receiving from a network operator values representing minimum average forwarding rate percentage for each of more than one distinct classes of service associated with transmission of packets from a radio node of a network to recipients.

Bonomi et al. discloses receiving from a network operator values representing minimum average forwarding rate percentage for each of more than one distinct classes of service associated with transmission of packets from a radio node of a network to recipients (see col. 9, lines 10-13, the scheduler can guarantee a minimum percentage of bandwidth to different traffic class).

Both Patel, and Bonomi disclose to minimize congestion within the communication network. Bonomi recognizes receiving from a network operator values representing minimum average forwarding rate percentage for each of more than one distinct classes of service associated with transmission of packets from a radio node of a network to recipients. Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the system of Patel with the teaching of Bonomi to represent minimum average forwarding rate percentage for each of more than one distinct classes

of service associated with transmission of packets from a radio node of a network to recipients in order to minimize congestion within the communications network.

29. Claims 30-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combined system (Patel - Bonomi) in view of Tiedmann et al. (U.S.Patent No. 6,567,420 B1).

In the claim 30, Patel discloses the limitations of claim 27 above.

However, Patel is silent to disclosing the percentage comprises a percentage of a total bandwidth of a link on which the packets are transmitted.

Bonomi et al. discloses the percentage comprises a percentage of a total bandwidth of a link on which the packets are transmitted (see col. 9, lines 10-13, the scheduler can guarantee a minimum percentage of bandwidth to different traffic class).

Both Patel, and Bonomi disclose to minimize congestion within the communication network. Bonomi recognizes the percentage comprises a percentage of a total bandwidth of a link on which the packets are transmitted. Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the system of Patel with the teaching of Bonomi to provide the percentage comprises a percentage of a total bandwidth of a link on which the packets are transmitted in order to minimize congestion within the communications network.

30. In the claim 31, Patel discloses the limitations of claim 27 above.

However, Patel is silent to disclosing controlling an order in which the packets are transmitted to the recipients based on rates of transmission and classes of service of the packets.

Bonomi et al. discloses controlling an order in which the packets are transmitted to the recipients based on rates of transmission and classes of service of the packets (see col. 9, lines 10-13, the scheduler can guarantee a minimum percentage of bandwidth to different traffic class).

Both Patel, and Bonomi disclose to minimize congestion within the communication network. Bonomi recognizes controlling an order in which the packets are transmitted to the recipients based on rates of transmission and classes of service of the packets. Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the system of Patel with the teaching of Bonomi to provide controlling an order in which the packets are transmitted to the recipients based on rates of transmission and classes of service of the packets in order to minimize congestion within the communications network.

31. In the claim 32, Patel discloses the order in which the packets are transmitted is controlled two level scheduling including a class level in which ordering is determined among the classes of services and a recipient level (virtual group) in which ordering is determined among the recipients associated with each class (see col. 10, lines 12-20).

32. In the claim 33, Patel discloses the limitations of claim 27 above.

However, Patel is silent to disclosing the packets are schedule for transmission based on at least one of the following for each of the classes: a configured minimum average forwarding rate percentage for the class, an actual forwarding rate percentage recently received by the class, and a channel quality for the recipient that belong to the class and are selected to receive service by the recipient level scheduling.

Bonomi et al. discloses the packets are schedule for transmission based on at least one of the following for each of the classes: a configured minimum average forwarding rate percentage for the class, an actual forwarding rate percentage recently received by the class, and a channel quality for the recipient that belong to the class and are selected to receive service by the recipient level scheduling (see col. 9, lines 10-13, the scheduler can guarantee a minimum percentage of bandwidth to different traffic class).

Both Patel, and Bonomi disclose to minimize congestion within the communication network. Bonomi recognizesthe packets are schedule for transmission based on at least one of the following for each of the classes: a configured minimum average forwarding rate percentage for the class, an actual forwarding rate percentage recently received by the class, and a channel quality for the recipient that belong to the class and are selected to receive service by the recipient level scheduling. Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the system of Patel with the teaching of Bonomi to provide the packets are schedule for transmission based on at least one of the following for each of the classes: a configured minimum average forwarding rate percentage for the class, an actual forwarding rate percentage recently received by the class, and a channel quality for the recipient that belong to the class and are selected to receive service by the recipient level scheduling in order to minimize congestion within the communications network.

***Conclusion***

33. Any inquiry concerning this communication or earlier communications from the examiner should be directed to CHUONG T HO whose telephone number is (571) 272-3133. The examiner can normally be reached on 8:00 am to 4:00 pm.

34. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

02/03/06

WELLINGTON CHIN
SUPERVISORY PATENT EXAMINER